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World-Class Enterprise Architecture

A White Paper by:

The Open Group Adoption Strategies Working Group

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World-Class Enterprise Architecture

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Executive Summary

This White Paper is intended to help organizations who are attempting to set up an enterprise architecture practice. It shows how organizations can use a modular, iterative, and incremental approach in order to develop an architectural capability that is otherwise a large and complex undertaking. Setting up an enterprise architecture function is not an exercise that should typically be completed in a single revolutionary step, but in an incremental and evolutionary manner.

This White Paper provides assistance in overcoming common pitfalls in the adoption of enterprise architecture, and will help to ensure that the enterprise architects are focused on activities that provide recognized value to the organization.

Most enterprise architecture efforts to-date have focused on the deployment of tailored frameworks within the organization in order to improve the alignment between the business and IT disciplines. However, the specific business drivers within each industry, and overarching drivers across industries, which will have a bearing on enterprise architecture within an organization, have not been fully explored and analyzed. This White Paper attempts to re-address this gap by helping organizations to first understand their current drivers and challenges, and then develop a roadmap that links the deployment of architectural capabilities within the organization, to specific challenges that are based on the inherent nature of the organization. Only then can organizations focus their enterprise architecture effort on developing the appropriate capabilities within the business, IT, or both functions.

Introduction

Abstract

The world is changing at a pace faster than ever experienced. Several trends in demographics, technology, the environment, globalization, public attitudes, and political institutions are driving Government[1] and Industry agendas as never before. In order to respond to the demands and needs of their stakeholders, organizations need to develop new and better ways of managing continuous change at ever-increasing pace to deliver significant value in a transparent manner.

Organizations need an enterprise architecture function as an integral capability in order to support the requirement for continuous change. However, over the years, many organizations have attempted to set up enterprise architecture practices only to see them fail after a few years. These failures are due to several reasons, such as an inability to merge enterprise architecture processes with the other management processes within the organization – for example, demand management – or the lack of authority for enterprise architects – for example, when making strategic decisions or quality assuring programs and projects.

In spite of these previous failures, organizations are again trying to set up enterprise architecture functions as they have found that no other pragmatic alternatives exist.

Enterprise architecture is thus here to stay.

From a number of proprietary frameworks that have been developed by specific individuals or organizations over the last few decades, enterprise architecture has now become main-stream, with the development and adoption of open frameworks such as The Open Group Architecture Framework (TOGAF™).

Organizations are deploying enterprise architecture functions at the heart of their operations in order to maximize the impact, effectiveness, and therefore benefits of enterprise architecture. This central position means that the consequences of enterprise architecture failure are also high. For this reason, organizations must strive to develop world-class enterprise architecture from the outset.

World-class enterprise architecture is the result of a mature and operational enterprise architecture function, within an organization, that leverages the entire suite of enterprise architecture capabilities. World-class enterprise architecture also provides a next-generation maturity model and roadmap that allows organizations to plan and monitor their progress on their particular enterprise architecture journey.

Why is this Document Important?

This White Paper is intended to help organizations who are attempting to set up an enterprise architecture practice. It shows how organizations can use a modular, iterative, and incremental approach in order to develop an architectural capability that is otherwise a large and complex undertaking. Setting up an enterprise architecture function is not an exercise that should typically be completed in a single revolutionary step, but in an incremental and evolutionary manner.

This White Paper should provide assistance in overcoming common pitfalls in the adoption of enterprise architecture, and ensure that the enterprise architects are focused on activities that provide recognized value to the organization.

[1] The Future and How to Think About It, Report by the Performance and Innovation Unit (PIU), UK Government, 1999

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However, the specific business drivers within each industry, and overarching drivers across industries, which will have a bearing on enterprise architecture within an organization, have not been fully explored and analyzed.

This White Paper attempts to re-address this gap by helping organizations to first understand their current drivers and challenges, and then develop a roadmap that links the deployment of architectural capabilities within the organization, to specific challenges that are based on the inherent nature of the organization. Only then can organizations focus their enterprise architecture effort on developing the appropriate capabilities within the business, IT, or both functions.

How is this Document Structured?

This document has been structured in a manner that allows readers to understand the key steps of the approach that needs to be followed in order to develop a set of enterprise architecture capabilities. Each section includes supporting tips and rationale for each step of the approach. This approach is generic and thus can be followed by organizations regardless of their industry, size, core competency, or internal structure. This approach should also be interpreted as a toolbox from which techniques may be utilized on a need-by-need basis, as opposed to a prescriptive methodology.

The diagram below illustrates the five major steps of this approach.

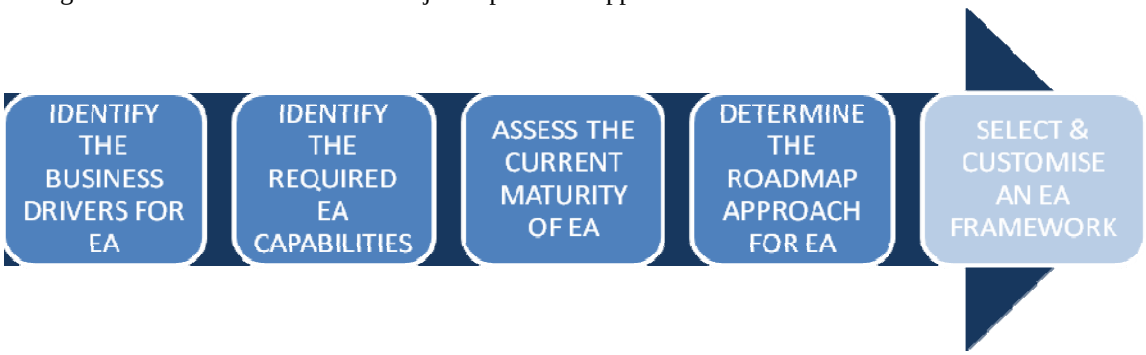

Figure 1: World-Class Enterprise Architecture Approach

This document describes the first four steps of this approach, as the fifth step is dependent on the enterprise architecture framework selected:

- The **Industry Challenges** section looks at some of the trends and key challenges faced by organizations in a number of industries. Enterprise architects need to understand the challenges and their implications as they start to develop a world-class enterprise architecture function within the organization.
- The **Capability Model for World-Class Enterprise Architecture** section describes the capabilities that a world-class enterprise architecture function would need to adopt within an organization.
- The **Audience for World-Class Enterprise Architecture** section describes a number of the typical audience stakeholders for a world-class enterprise architecture function within an organization. For the purpose of the approach that is described in this White Paper, this section is a precursor to the next section (**World-Class Enterprise Architecture: Capability Assessment**), as stakeholders will need to be assessed together with the enterprise architecture capabilities in order to determine the current and future state capability models. It is thus not shown as a separate step in the approach diagram.

- The **World-Class Enterprise Architecture: Capability Assessment** section outlines the assessment options that an organization can undertake in order to first identify the capabilities needed to respond to a specific business challenge, determine the level of maturity of its existing enterprise architecture function, and then develop a roadmap that makes the enterprise architecture function world-class.

Lessons Learned

Throughout this White Paper, "Lessons Learned" sections will highlight the critical success factors that have been identified for each step of the approach.

Industry Challenges

This section looks at some of the trends and key challenges faced by organizations in a number of industries. Enterprise architects need to understand the challenges and their implications as they start to develop a world-class enterprise architecture function within the organization.

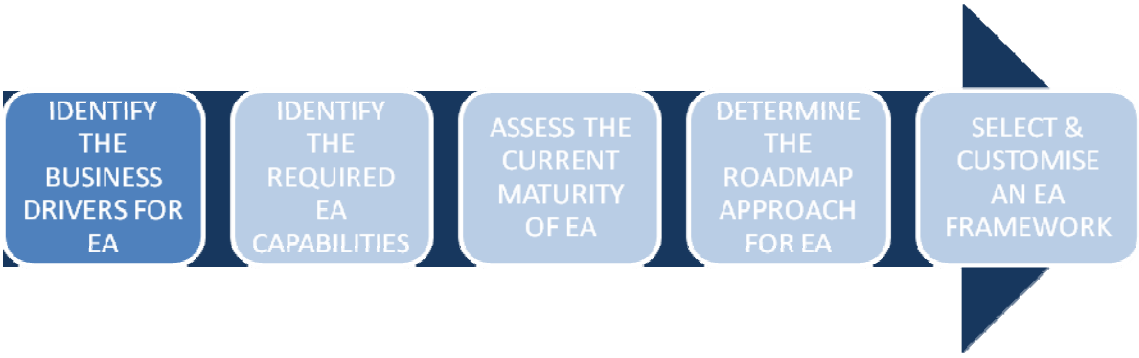

Figure 2: World-Class Enterprise Architecture Approach – Identify Business Drivers

Public Sector

Various reports[2] express Governments' views for the future, and assess their predictions based on the latest research and evidence. These reports highlight global trends, the drivers behind these trends, and the implications of these trends on Government policy. A summarized description of these trends and their associated implications is provided below:

- **Demographics** – where the world, and especially ageing, population is expected to grow rapidly over the next few decades. The increase in global population will lead to the opportunity of larger markets but the challenge of complex migration and greater pressure on public services. As a result, Governments will need to continue to:
  - Ensure that the citizen's experience is seamless, consistent, and efficient regardless of the Government department being engaged, or type of service being accessed
  - Treat each citizen as a unique customer by responding to their diverse, complex, and evolving needs throughout their lifetime from birth through to childhood, youth, adulthood, parenthood, retirement, and death
  - Deliver information, products, and services to citizens in a consistent, usable, and secure manner, through digital communication channels and media that can provide increased flexibility and reduced cost for all parties
  - Transform specific business and technology capabilities internally in order to meet citizen expectations
- **Science and technology** – where the emphasis will be on changes in the application of existing technologies and the practical use of new technology, as opposed to technology innovation for its own sake. Technology and communication advances will:
  - Lead to the opportunity of new global networks

[2] Modernising Government, White Paper by the UK Government, 1999; The Future and How to Think About It, Report by the UK Government; 1999; Strategic Challenges, Project, Performance and Innovation Unit (PIU) of the UK Government; Realising Britain's Potential: Future Strategic Challenges for Britain, Strategy Unit, UK Government, 2008

  - Challenge the dependency on complex infrastructure and exposure to criminal networks
  - Allow simpler procurement of transformational services from third parties in order to lessen the chances of project failure, and increase the degree of competition
- **Global environment** – where global warming is already fully underway, but because the growth rate is not linear, the consequences are hard to predict. The increasing pressure on global resources will:
  - Lead to the opportunity of alternative energy and environmental goods
  - Challenge climate change, pollution, and resource sustainability
- **Economic globalization** – where further growth in world trade and capital flows is driven by reduced transaction costs. The growth of the global economy and interconnection of economies will:
  - Lead to the opportunity of new markets and therefore the need to potentially regulate them
  - Lead to the challenges of new competition and vulnerability to shocks
- **Political institutions** – where devolved institutions, a rights culture, enlarged economic trading and political blocs, and developing global institutions are all likely to have a greater role. Therefore, the role of Government is likely to change to the extent where it needs not just to predict the future and respond, but try to influence it.

Although, these papers have been published over a ten-year period, the global drivers and trends for Government remain the same. What have become clearer are the implications of these trends, and the resulting opportunities and threats that they portray.

Pharmaceutical Sector

The pharmaceutical industry faces enormous challenges[3] as sales growth is declining both in the US and EU. Since 2000, the pharmaceutical industry has lost more than $50 billion in revenues as many blockbuster brands have come off patent. Thirteen blockbuster drugs, that collectively represent revenues of about $67 billion between 2007 and 2011, are expected to come off patent. Increased litigation claims and AT RISK launches by aggressive generic drug producers have compounded this issue.

As a result, pharmaceutical organizations realize that they have to:

- **Look at new patterns for growth –** to-date, the pharmaceutical business model has consisted of developing a new drug, bringing it to market after a long period of tests and clinical trials, and hoping it will then become a blockbuster. However, the business environment is changing and the current pharmaceutical business model is becoming less viable for many reasons.
- **Find blockbusters as research and development (R&D) costs increase** – pharmaceutical R&D now has the challenge of developing drugs that more precisely target the condition they are developed for, with fewer side-effects, thus raising the time and cost associated with developing new products. Regulators do not accept new drug risks, even if the side-effects will potentially touch a low percentage of patients.
- **Leverage geographic differences** – regulatory rules in different countries allow pharmaceutical organizations to put drugs on the market in some locations but not in others. Recent research also reveals that some drugs work well in some regions, and poorly in others, as cultural habits (for example, meals) are different. As a result, pharmaceutical organizations wish to develop their business in new markets, as well as develop local research capabilities in countries such as China.

3 Pharmaceutical Industry Trends Drive Enterprise Architecture, Forrester, 2009

- **Continue to consolidate –** over the past ten years, the pharmaceutical industry has seen a great deal of consolidation, which is set to continue at an accelerating pace.
- **Support regulatory pricing requirements** – an expected outcome of future healthcare reforms is a greater regulatory scrutiny on drug pricing. The global pharmaceutical industry is already familiar with the impact of healthcare regulation. For example, in France, the price for reimbursed drugs is hardly negotiated with the regulator. Additionally, regulators encourage generic drugs replacement at the end of the patent period, shortening the high-margin commercialization period that once counterbalanced pharmaceutical organizations' R&D investments.
- **Adopt Innovation Networks –** pharmaceutical organizations are progressively adopting the concept of innovation networks in order to drive business change. Most pharmaceutical organizations are now engaged with partners in order to co-develop new drugs. For example, they either buy biogen start-ups or co-develop new types of genetic-based drugs. These biogen arms act as the inventor with the pharmaceutical organization acting as the transformer (clinical trials), the broker, and often also the financer.
- **View technology as an innovation driver** – technology has always been part of the R&D process, providing both laboratory equipment and computation capabilities for data analysis and simulation. However, pharmaceutical organizations are now seeing technology as an innovation driver in other aspects of their value chain. For example, some researchers are testing nanotechnology as a vehicle to bring drug molecules closer to cancer cells and then using light or x-rays to let nano-tubes free the drug molecules.
- **Reduce costs of the business and IT** – pharmaceutical organizations spend around 2.7% of their revenue on IT; somewhat less than the average firm. About 21% of IT spending goes toward new IT investments, and 79% goes toward ongoing operations. This increased pressure to reduce costs naturally sees pharmaceutical organizations looking to improve their operational efficiency, which has always been considered to be below other industries.

Finance Sector

Business transformation is a common theme throughout the financial services[4] world due to factors such as deregulation, globalization, and the spread of information and communication technologies. Deregulation has made it possible for financial services providers to expand their portfolio of services, and for non-traditional participants to enter the financial services market.

Globalization is attempting to harmonize regulations and standards across nations; for example, within the EU and World Trade Organization (WTO).

Information and communication technologies have enabled the expansion of financial services via the integration of financial data and service products, and deployment of online and mobile delivery channels.

Each sub-sector within the financial services industry has its own specific business drivers. However, for the purpose of this White Paper, the focus is on organizations in the retail banking sector, for which the drivers are to:

- **Win new customers –** some retail banks are reconsidering the way in which they operate by focusing more on customer value as opposed to volume. Organizations typically use two alternative approaches – lifestage marketing and affinity marketing – to win new customers and expand the share of their wallet. As a result, retail banks need to:
    - Increase customer satisfaction, decrease churn, and ultimately improve customer profitability, once a

[4] Technology Trends and Financial Services, Capgemini

deeper understanding of their customers has been obtained

- Exploit the vast quantities of data currently held in order to have a greater understanding of customers' wants and needs
- Eliminate the overlapping functions in separate channels and create a unified channel structure that will reduce operational and maintenance costs; additional distribution channels can then be added with ease and minimal cost
- Create a unified view of the customers, irrespective of products held or channels used

- **Provide mobile banking and payment services** – mobile payments are the key technological innovation within the mobile banking industry, providing the facility to use mobile phones to make non-cash financial transactions while on the move. Retail banks need to target customers with mobile pre-paid and post-paid services in order to increase the profitability of retail accounts that generate barely enough in fees to cover the massive costs of payments handling.
- **Provide flexible go-to-market offerings** – the organization structure has evolved from a hierarchical branch office structure to a many-to-many matrix web of front and back-offices, direct channels as call centers, and the Internet. Retail banks need to leverage this flexible web in order to keep pace with client expectations and competitor initiatives.
- **Simplify pricing models** – retail banks need to encourage creativity in terms of pricing, especially by tailoring customer prices and billing modes.
- **Monitor risks** – the financial crisis has highlighted the need for careful monitoring of risks on complex financial products. Although retail banking is highly profitable, it requires a sound measurement of profits and risks, with a full accounting of the books at the end of each trading day.

Retail Sector

Retailers must deal with increased competition in their operating markets, and massive sustained pressure on the supply chain in order to drive efficiencies. In order to do so, retailers typically have to:[5]

- **Innovate and engage with consumers** – retailers have to adopt a customer-centric approach as technology-savvy consumers[6] today are increasingly looking at more and more product categories as commodities. Consumers are additionally becoming less predictable, and more polarized, with some segments trading up to high-value brands and others trading down to low-cost commodity providers. Affluent consumers are increasingly questioning retailers' green credentials. As one measure of response, some brick and mortar retailers are providing kiosks and self-checkouts in order to create a better in-store experience for their customers.
- **Extend the retail channels** – retailers need to provide innovative channels in order to respond to the increased complexity of the market, and create a seamless multi-channel experience for consumers.
- **Integrate retail planning & execution –** retailers will need to enhance the visibility and improve the efficiency of the demand chain in order to respond to the different needs of customers, as well as cost management pressures. Retailers will thus be able to react effectively to incremental sales, inventory turns, and a required reduction in cycle times.
- **Optimize the core business –** mergers, acquisitions, outsourcing, and partnerships are just some of the

[5] Retail Trends, Capgemini, 2008

[6] The Gap: "Cradle-to-Grave" concept, Williams-Sonoma

options that retailers are exploring. Retailers are increasingly employing different business models based on their core competencies and future aspirations. Labor constitutes a significant cost component for retailers, whereas improved employee productivity can have a significant impact on the bottom line.

- **Manage & leverage business information –** as a result of customer-centric merchandising, retailers will need an insight into customer data for planning activities, for which loyalty programs are proving invaluable.

Utility Sector

Several factors are driving fundamental change in the industry where utility organizations will need to:

- **Enhance their green credentials** – utility organizations need to respond to concerns about global climate change. The EU Emission Trading System (ETS), which came into effect from January 2005, appears to have benefited power generators in the form of higher electricity prices, as the carbon cost has been passed on to customers, without much investment being made for cleaner power generation.
- **Provide energy security** – energy security strategy is shaping the industry's future. Utility organizations and Governments realize that as coal and oil-fired plants are retired and nuclear plants are decommissioned, they will become increasingly reliant on imported gas. Much of this gas is likely to come from politically unstable parts of the world. Concerns about energy security are forcing utility organizations to not just consider extending the lives of nuclear plants, but also commission new ones.
- **Respond to competition** – until this century, power and gas firms had operated for decades as monopolies with minimal competition. The rapid transition into a competitive market has forced many of these organizations to reconfigure their competitive strategies in power generation as well as supply. Organizations have undertaken mergers and acquisitions in order to increase efficiency and improve competitiveness.
- **Comply with regulations –** utility organizations need to balance the expected high reliability of their infrastructure[7], need for more consumption, minimal environmental impact, and generation costs. In addition, they need to be able to respond to changes in compliance regulations, which result in enforced mergers and acquisitions, or demergers**.**
- **Innovate with technology** – the utility sector is ripe for a technology revolution that is being driven by environmental and customer demands, as well as an increasing pressure to drive down costs.
- **Diversify into alternative sources of power** – hydropower and renewable energy sources are set to grow rapidly, even though their share in the total global production of power is expected to be limited. Although an interest in nuclear power has seen a strong revival, its role in global electricity production is also likely to lessen.

Oil and Gas Sector

The recession has had a significant impact on the oil and gas industry[8] with consumption and revenues down in 2009, and OPEC unable to manage prices through supply cuts. Also, the price of oil seems to be dependent on new, and yet undetermined, factors as the traditional metrics such as the dollar value, relative value of oil to natural gas on a Btu equivalent basis, rig count, are out of alignment.

[7] TechnoVision 2012 for the Utilities Industry, 2010

[8] Worldwide Oil & Gas Industry Top 10 Predictions. IDC, 2010

However, oil and gas prices have since rebounded even though the oil forecast for 2010 and 2011 widely varies from $55 to $105 per barrel, and the gas forecast is between $6 and $7 Mcf.

Oil and gas organizations are also anticipating additional risk from climate change bills and the increased enforcement of environmental regulations.

With these trends anticipated, oil and gas organizations are expected to:

- **Invest in digital energy** – technology will become more critical in order to look for oil and gas in new and challenging environments. New capabilities will need to include the construction and analysis, via modeling, simulation, optimization, and visualization techniques, of specific earth, reservoir, facilities, and economic models. Technology will also enable oil and gas organizations to extract the maximum business value from information, specifically exploration and production information, and improve performance management and decision-making in an ever-increasing data environment.
- **Improve the asset utilization rate** – where the focus is on reducing non-productive time, and employing preventive maintenance in order to maintain equipment and facilities in a satisfactory operating condition by providing for systematic inspection, detection, and correction of failures, either before they occur or by reducing the response time for the repair. Lean concepts, best practices, and other tools will help oil and gas organizations to improve productivity and efficiency, reduce expenses, mitigate risk, and detect potential equipment disruptions.
- **Implement real-time data acquisition and surveillance technology** – where surveillance and field automation capability such as sensors in the field streaming real-time facility, well, and reservoir data will aid enhanced oil recovery. An improved focus on feeding data captures into engineering applications to permit in-depth technical analyses that improve production operations and recovery over the life of each asset. Upstream petroleum asset teams trying to harness the exploration and production data storm.
- **Increase sustainability measures** – climate change legislation will increase sustainability measures for oil and gas. Oil and gas companies will re-evaluate their raw material management and develop new criteria for suppliers. The pressure for capital expenditure budgets to support new exploration and production budgets will reduce capital available for renewable energy programs.
- **Respond to growth in energy commodity trading** – the need to meet environmental compliance directives will be elevated to the executive level. While some hedge funds have departed, financial institutions and energy companies, particularly mid-stream, are beginning to make up the difference. Gas is also getting back into the trading range. Trading volumes continue to rise at major exchanges such as Intercontinental Exchange. The number of market participants in the power market has continued to grow. The market has already anticipated changes in legislation and regulation, such as position limits. Still cautious of counter-party risk, traders are looking to the exchanges for electronic clearing. Innovative trading companies will invest in up-to-date visibility to natural gas storage, gas production at the wellhead, or power at the power generation meter. Some have already achieved a global trading management system that ensures a real-time analysis of positions and an immediate valuation of risks, delivered by live mark-to-market functionalities.
- **Improve operational efficiency in supply chain** – where an investment in technology, and the integration of exploration, production, refining, and marketing operations is required for an optimized supply chain. In addition, the focus may shift away from ERP systems, to industry-specific solutions, and forecasting and planning applications that support inventory management and the scheduling of materials and resources.

Conclusions from Industry Challenges

Although each industry has a unique set of drivers, several common themes appear across all the industries. These themes reflect the inherent nature of an organization which leads it to be customer-centric, internal efficiency (i.e., quality)-oriented, or product-centric. Regulatory requirements are a fourth theme that tends to be mandatory if an organization wishes to remain legally in business.

However, these themes alone are not sufficient to allow an organization to identify the short, medium, and long-term architecture capabilities which it needs to develop. An added complexity is the development stage of the organization. Organization development theory[9] states that an organization will evolve through several stages of evolution and revolution from a young entrepreneurial start-up to a mature and complex corporate. For the purpose of this White Paper, only two development stages, one at each end of the development spectrum, have been used to define organization type, namely corporate and entrepreneurial. A third organization type of partner has been included to highlight the differences between an organization that keeps all of its functions in-house, and an organization which only keeps it core functions in-house and elects to use third-party suppliers for the remaining functions. The key characteristics of these organization types are:

- **Corporate** – typically, a large organization with multiple lines of business and functions that are all in-house, but probably operating as silos. Numerous and rigorous processes will bring order and manageability, but also increase bureaucracy, stifle innovation, and slow down change. These organizations will use third-party suppliers for a minimal number of non-core services.
- **Entrepreneurial** – typically, a start up or innovative organization with minimal rigor and formal processes as it needs to be able to react quickly to change drivers. These organizations thus tend to be tactical and project-oriented.
- **Partner** – typically, an organization that is between the other two organization types in terms of its development. It is thus past the entrepreneurial stage but is not yet a large and bureaucratic corporate. Therefore, it has a certain level of rigor but not too much that will stifle innovation. In order to remain flexible in its growth, the organization will retain the core competencies in-house whereas the other parts of the value chain will have been outsourced to partners. The only difference between third-party suppliers and partners, for the purpose of this White Paper, is that the former are treated as commodities whereas the latter are strategic in nature. These organizations need to clearly articulate Service Level Agreements (SLAs) that highlight specific roles and responsibilities, and co-ordinate multiple parties in order to realize their common goal.

The sub-sections below describe each of the common themes in more detail. Each sub-section provides an indication of the initiatives that an organization may wish to consider in order to meet its goals and objectives, and the challenges that an organization may face based on its current stage in the organizational development lifecycle.

Customer-Centric

The goal of this theme is to attract new customers and leverage the existing customer base.

The business challenge is to provide a positive, seamless, and consistent customer experience by instantly recognizing each individual customer, their current situation, and potential needs during each interaction that a customer has with the organization. The organization will need to show that they really care and consider themselves to be in a partnership with their customers.

[9] Evolution and Revolution as Organizations Grow, Harvard Business Review, Larry E Greiner

The following list highlights a few initiatives that an organization, which focuses on this theme, may wish to consider:

- Introduce **new channels** in order to reach out to customer segments that the organization would not otherwise be able to penetrate, as well as provide existing customers with a choice of communication, sales, or distribution channel
- Gain a greater insight into the **customer lifecycle**, demographics, and behavior by strategically understanding its current or target customer base via the mining of existing customer data, or the addition of market research data, which provides the results from independent analysis undertaken on demographic data
- Implement **closed-loop marketing** where marketing campaigns and promotions can first be planned and designed, and then the results captured in order to inform future campaigns and promotions
- Provide a **single customer view** in order to ensure that the relevant stakeholders have access to one version of the truth of customer data across the entire organization
- Design and implement **loyalty programs** that provide customers with benefits that encourage them to stay with the organization

The challenges for this theme will vary for each organization type as it tries to meet the business challenge and successfully deliver one or more initiatives.

Each line of business within a corporate organization will probably manage its own relationship with the customer, such that it has sole control over the customer experience. Therefore, multiple sources of customer information will need to be quickly synchronized across the organization. Mergers and acquisitions are a part of daily life, leading to a required ability to separate or join infrastructure and information systems efficiently and effectively in a manner that does not affect the customer. In this environment, enterprise architects will need to manage senior stakeholders, overcome red tape to turn plans into action, and leverage program management and governance frameworks in order to make decisions and deliver solutions.

Entrepreneurial organizations will need to ensure that the initial experience of their customers is completely satisfactory in order to build a positive perception amongst “innovators” and “early adopters” who will use viral networking to inform other customer types. Therefore, these organizations will need to conduct the real-time analysis of customers and their changing requirements, and may need to quickly design, manufacture, and deliver new products and services in response to fluctuating market conditions. In this environment, enterprise architects will need to exploit existing frameworks and models in order to accelerate decision-making.

Controlling the customer experience within partner organizations is much more difficult as a single point of contact for customers is unlikely. Therefore, the performance of all partners needs to be measured accurately, evidence of customer interactions needs to be shared, and communication between all parties needs to be quick and seamless. The primary decisions are whether a single point of contact for all customer contact is required, and whether the customer should be aware that multiple parties are involved in the provision of a product or service. In this environment, enterprise architects will need to operate within pragmatic governance models, and design cross-organization monitoring and tracking systems with the appropriate confidentiality and security controls.

Internal Efficiency

The goal of this theme is to focus on quality as the primary driver within an organization.

The business challenge is to optimize all internal processes as part of a Total Quality Management (TQM) system within an organization.

The following list highlights a few initiatives that an organization, which focuses on this theme, may wish to consider:

- **Optimise the core business** as organizations are increasingly employing different business models based on their core competencies and future aspirations. Mergers, acquisitions, outsourcing, and partnerships are just some of the mechanisms available as vehicles for change.
- Continue to **consolidate and rationalize** the IT estate as the current economic climate is forcing organizations to focus on cost reduction and obtaining a bigger bang for their buck.
- **Integrate the planning and execution processes** as organizations will need to forecast the future more effectively in order to respond in an agile manner to the different needs of customers as well as cost management pressures. IT solutions will need to leverage, for example, operational dashboards, RFID, wireless solutions, and collaborative planning in order to ensure the efficient management of the demand chain.

The challenges for this theme will vary for each organization type as it tries to meet the business challenge and successfully deliver one or more initiatives.

Corporate organizations will have multiple processes and systems that are probably incompatible, not easily integrated, and have varying levels of quality. Enterprise architects will need to increase the openness of IT in order to facilitate future changes to the business model or IT estate. These organizations may also need to deal with ambiguity and navigate red tape in order to solve problems. LEAN, Six Sigma, business process improvement, and re-engineering are going to be useful techniques for the enterprise architect.

Entrepreneurial organizations will probably need to introduce and adopt best practice frameworks and processes in order to build a platform for growth. In this environment, enterprise architects will need to look at off-the-shelf capabilities and trends such as cloud in order to accelerate the implementation of new solutions.

Partner organizations will need to share information in order to facilitate collaborative working and enforce quality control amongst the extended enterprise. In this environment, enterprise architects will need to focus on security, information flows, common data models, and process alignment.

Product-Centric

The goal of this theme is to increase innovation and reduce development lead times for new products and services.

The business challenges are to co-ordinate the product R&D processes that look at re-use and lessons learned, and validate the customer demand and return on investment (ROI).

The following list highlights a few initiatives that an organization, which focuses on this theme, may wish to consider:

- **Identify bestselling products** more effectively as R&D costs increase and customers become more sophisticated
- **Simplify pricing models,** as organizations will need to encourage creativity in terms of pricing, especially by offering menu-based offers, tailoring customer prices, and providing flexible options for billing

The challenges for this theme will vary for each organization type as it tries to meet the business challenge and successfully deliver one or more initiatives.

Corporate organizations tend to face the challenges of product proliferation, overlapping products that result in cannibalization, separate processes and systems for individual products, an inability to rationalize product portfolios, and uncoordinated research and product development across the enterprise. Enterprise architects will thus need to help these organizations transform their product development capability into one that enables them to develop products flexibly and rapidly.

Partner organizations and their enterprise architects face the challenges of new product development due to an infrastructure that probably only caters for current offerings, collaborative R&D in order to obtain buy-in from all strategic partners at the outset, and build *versus* buy as they attempt to quickly ramp up their product development capability.

Entrepreneurial organizations face the challenges of harnessing innovation and reacting rapidly to market intelligence. In this environment, enterprise architects thus need to focus on data analysis and visioning.

Regulatory Requirements

The goal of this theme is to meet all legal and compliance requirements in order to continue to stay in business.

The business challenge is to identify all the relevant stakeholders, agree objectives for compliance with the regulators and other compliance bodies, and ensure that auditable evidence is captured in order to prove compliance.

The following list highlights a few initiatives that an organization, which focuses on this theme, may wish to consider:

- **Compliance** with general best practice and international and national directives such as the Data Protection Act (DPA) and Freedom of Information (FOI) act, which are mandatory
- **Support specific regulatory requirements** as customer pressure and Government concern is resulting in the creation of watchdogs, consumer groups, and regulatory bodies
- **Monitor risks** even more as the financial crisis has highlighted the need for careful monitoring of risks on complex and high-risk areas within an organization

The challenges for this theme will vary for each organization type as it tries to meet the business challenge and successfully deliver one or more initiatives.

Corporate organizations face the challenges from an ever-changing landscape, which means that organizations will have to second-guess the future and be in a position to be able to respond quickly. For example, they will have to provide one version of evidential truth in order to prove compliance.

Partner organizations face the challenges of risk monitoring and management across the extended enterprise. Enterprise architects will thus need to focus on governance frameworks, and monitoring and alerting solutions.

Entrepreneurial organizations face the challenges of ensuring compliance in a naturally, rapidly, changing landscape, analyzing the compliance implications of new initiatives within the organization, and identifying opportunities from new regulations. In this environment, the enterprise architect will need to focus on compliance and impact analysis.

Summary of Conclusions

The four themes above emphasize that although an organization may sit within a specific industry and be at a specific growth stage in its development, it will still need the full range of enterprise architecture capabilities in order to respond to its challenges.

The question is how the organization should start in order to create and develop its enterprise architecture capability. The answer, as highlighted in the themes above, depends on the inherent nature of the organization which comes down to the type of organization it is, based on its current stage of development; i.e., is it a corporate, partner, or entrepreneurial organization.

Each type of organization operates in a difficult business environment with constant change, and therefore probably needs to deploy transformational initiatives in order to survive. These initiatives will require complex changes of high risk. Undertaking a one-off program or project will not be sufficient, which means that a coherent architecture capability is required in order to mitigate the risk and ensure a successful business outcome. Enterprise architecture will help an organization describe the linkage all the way through from a strategic "big idea" to implementation "on the ground".

Although an organization will need a fully functioning enterprise architecture capability in order to pull off these big complex changes, it does not need to have the full set of capabilities deployed on day one. To determine the initial set of architecture capabilities required, an organization will need to look at:

- The **maturity** of its existing architecture capability based on an assessment that highlights strengths, weaknesses, and key areas for improvement within the organization
- Its current **stage of development** that provides an insight into the rationale behind its existing structure, challenges, and drivers, which thus helps identify the next steps that the organization needs to undertake in order to further its development
- The key **stakeholders** in order to determine the business sponsors, and their challenges and drivers
- In-flight and future **initiatives** that an organization can undertake in order to accelerate the deployment of architecture capability

The purpose of this section is to help organizations identify their drivers that are based on industry trends or current challenges faced, and highlight typical solutions that organizations have implemented in order to respond to these drivers.

The next section outlines, in more detail, how an organization can start to develop a world-class enterprise architecture capability once it has identified its business drivers.

Capability Model for World-Class Enterprise Architecture

The section describes the capabilities that a world-class enterprise architecture function would need to adopt within an organization.

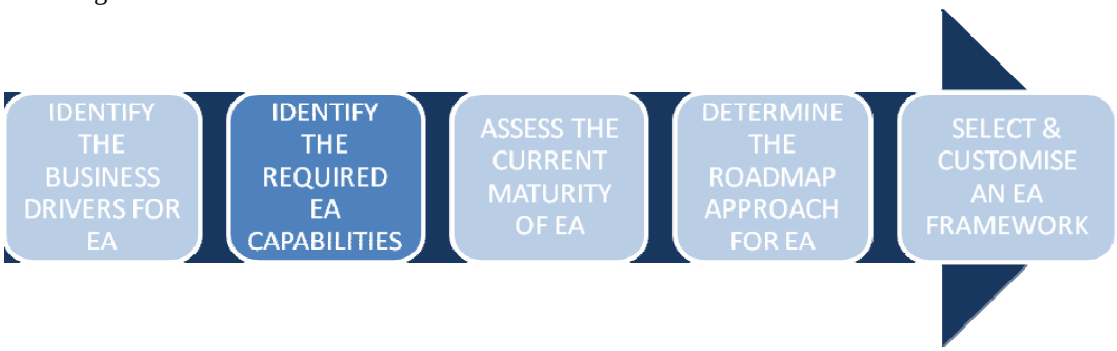

Figure 3: World-Class Enterprise Architecture Approach – Identify Enterprise Architecture Capabilities

An enterprise architecture capability, like any other business function, requires a number of elements such as people, process, technology, and information in order to operate effectively. Therefore, organizations can apply some of their generic practices and controls – for example, financial control, leadership, and the provision of human resource – to these architecture capabilities. However, other practices and controls for these architectural capabilities will be specific to the enterprise architecture function, as they will relate to the outcomes that enterprise architecture seeks to achieve.

Although some enterprise architecture capabilities will be specific to an organization – for example, due to its unique business model – most enterprise architecture capabilities have become best practice standards within this discipline.

This section describes each of these best practice capabilities, as illustrated in the diagram below, which organizations can use to structure roadmaps for the adoption of world-class enterprise architecture.

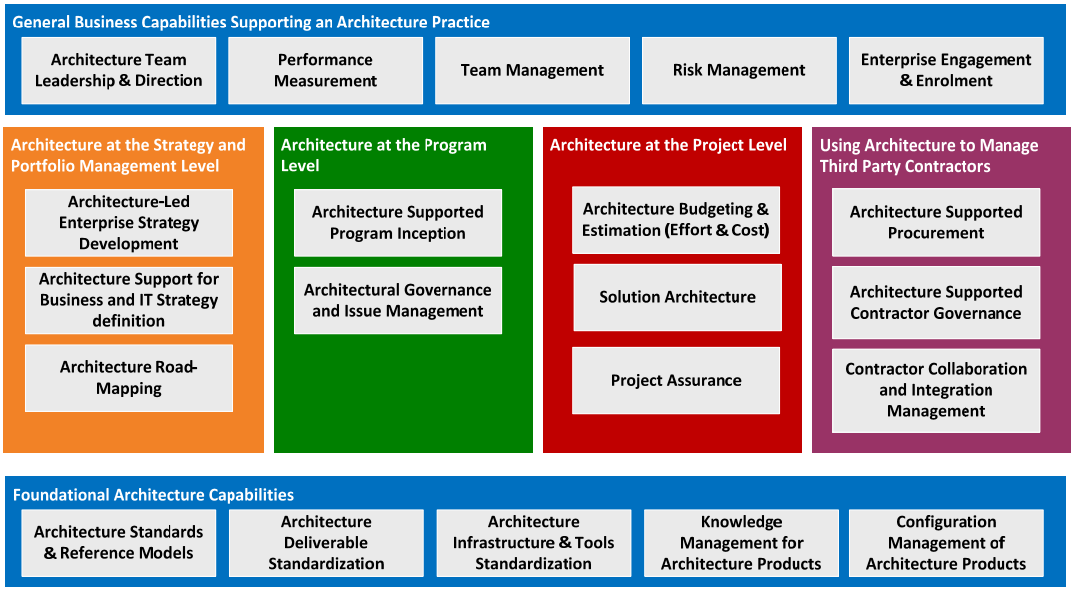

Figure 4: World-Class Enterprise Architecture Capability Model

General Business Capabilities Supporting an Architecture Practice

The diagram below illustrates the generic business capabilities that an organization would need to adopt in order to support a world-class enterprise architecture function.

Figure 5: World-Class Enterprise Architecture Capability Model – General Business Capabilities

Key capabilities within this area include:

- **Architecture Team Leadership and Direction** – which establishes a mandate for the group, appoints a leader, develops a compelling value proposition for the architecture team, and ensures an appropriate architectural team operating model is in place, including the assignment of accountabilities to individuals.
- **Performance Measurement –** which sets targets for the architecture function and its members. Measures performance against targets and takes the appropriate action in order to deliver to the required performance levels.
- **Team Management –** which assigns people to the architecture function and ensures that they are appropriately skilled and supported in order to be effective in their roles, including on-boarding, assignment to communities of practices, training, certification, and mentoring and coaching.
- **Risk Management –** which ensures the enterprise architecture function understands the risks that impact the organization, and develops a security and business continuity strategy in order to mitigate this risk to an acceptable level.
- **Enterprise Engagement & Enrolment –** which keeps interested parties involved and informed about current activities. Aligns the architecture activities to other methods and professions, develops a stakeholder management model, and ensures architects have an awareness of organizational and cultural change. Also, shares relevant outputs from activities within the operating unit.

Lessons Learned

Senior management commitment and involvement – a motivated senior management team is a critical success factor for enterprise architecture. If the will exists, ways can be found to make the architecture process more scalable, to overcome or adjust to tight budgets, or to market the enterprise architecture program more effectively. However, this progress will not happen with a reluctant or indifferent management team. Enterprise architecture is a long-term commitment which takes time and perseverance to pay off.

Communicating about enterprise architecture and its value for the organization is very important to its success – using the correct language and material for different audiences and developing an enterprise architecture allows you to highlight areas so that decisions can be made. This is typically not "one size fits all". A communication plan can be of great help to communicate effectively and avoid ivory tower architecture.

Enterprise architecture is a discipline that highly depends on the skills and competencies of its staff – credibility of staff determines to a large extent the success of an enterprise architecture practice. However, credibility can only be gained over years. It takes time to prove the success of a well-developed architecture or advice provided. Credibility depends on having the right level of competency of enterprise architecture leaders and practitioners.

Foundational Architecture Capabilities

The diagram below illustrates the foundational architecture capabilities that an organization needs to adopt in order to support a world-class enterprise architecture function.

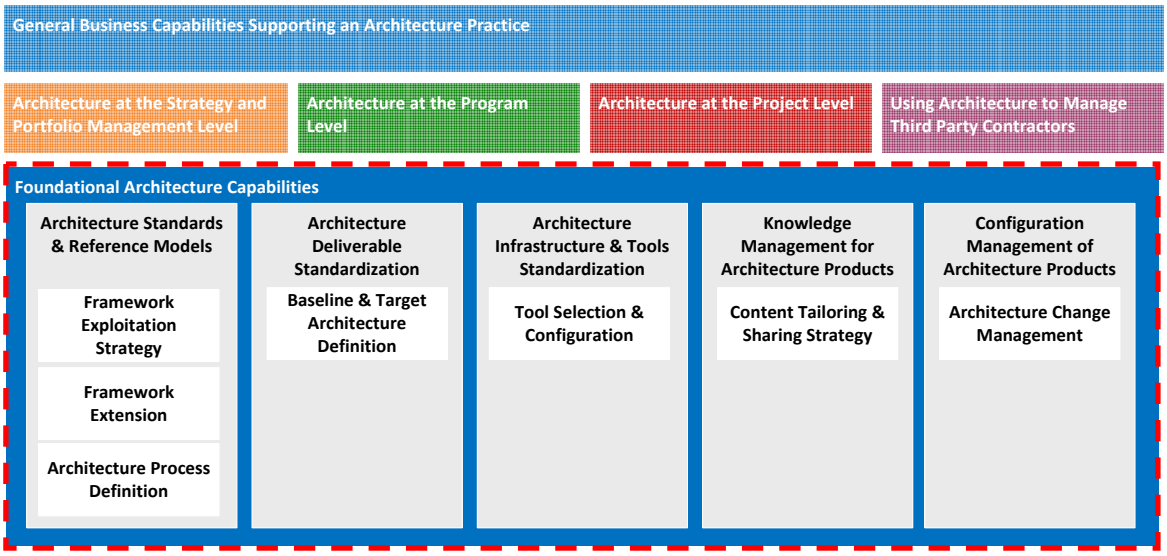

Figure 6: World-Class Enterprise Architecture Capability Model – Foundational Architecture Capabilities

A world-class enterprise architecture function needs a number of foundational capabilities in order to ensure the alignment and consistency of operations and content at the strategic, program, and project level.

Key capabilities within this area include:

- **Architecture Standards and Reference Models –** which applies governance and compliance criteria to architectures. Includes the standards classification of architecture building blocks, such as standard software products and standard data models, and standards for architecture representation and notation. Uses

architecture reference models to articulate re-usable, best practice approaches, and patterns for adoption within projects.

- **Architecture Deliverable Standardization –** which provides a set of deliverable templates with guidelines on how to populate them. Potentially includes checklists, or other forms of pre-population and clear quality criteria.
- **Architecture Infrastructure and Tools Standardization** – which provides a standard set of tools and infrastructure to support the work of architects.
- **Knowledge Management for Architecture Products –** which provides a model for publishing and organizing architecture content, and defining the information architecture for architecture content; for example, the glossary, taxonomy, metamodel, and the capability and resource to support knowledge management.
- **Configuration Management of Architecture Products –** which provides a model for assuring the currency and accuracy of architecture content, including a policy on which content needs to be updated, processes to update architecture content and assess its impact on other elements, and the capability and resource to perform configuration management activity.

Architecture at the Strategy and Portfolio Management Level

The diagram below illustrates the capabilities that an organization needs to adopt in order to provide a world-class enterprise architecture function at the strategy and portfolio management level.

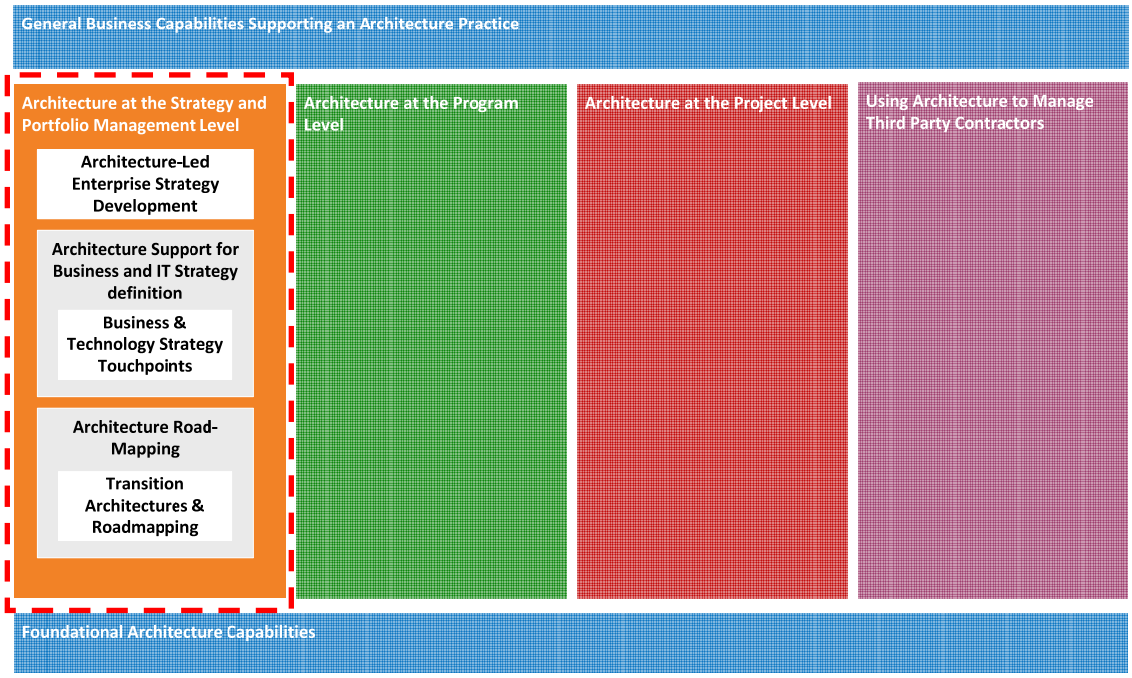

Figure 7: World-Class Enterprise Architecture Capability Model – Strategy and Portfolio Management-Level Capabilities

A world-class enterprise architecture function will determine an end-to-end target architecture, and develop roadmaps of change over a three to ten-year period in order to achieve that target architecture. Architectures at this level will typically span many change programs, or portfolios of change. Key capabilities within this area include:

- **Architecture-Led Enterprise Strategy Development** – which uses an architectural view of the enterprise to identify improvement opportunities to the way the organization operates.
- **Architecture Support for Business and IT Strategy Definition** – which uses architecture techniques as a supporting discipline to determine business and IT strategies. For example, architecture will provide structure and scope to a business problem that has not yet been defined. Also, uses architecture techniques to assess the complexity, feasibility, cost, impact, and dependencies of strategic change initiatives.
- **Architecture Road-Mapping** – which develops a strategic plan for the enterprise, showing the timing and sequencing of change activity. The roadmap will additionally show snapshots of the enterprise at particular transition milestones.

Lessons Learned

Involvement in both business and technology strategic planning is crucial – an enterprise architecture that has little to no linkage with business strategies and capabilities will find it difficult to induce and sustain significant investment in the recommendations from the enterprise architecture function. Providing effective guidance at the moment of decision-making is key for success.

Architecture at the Program Level

The diagram below illustrates the capabilities that an organization needs in order to provide a world-class enterprise architecture function at the program level.

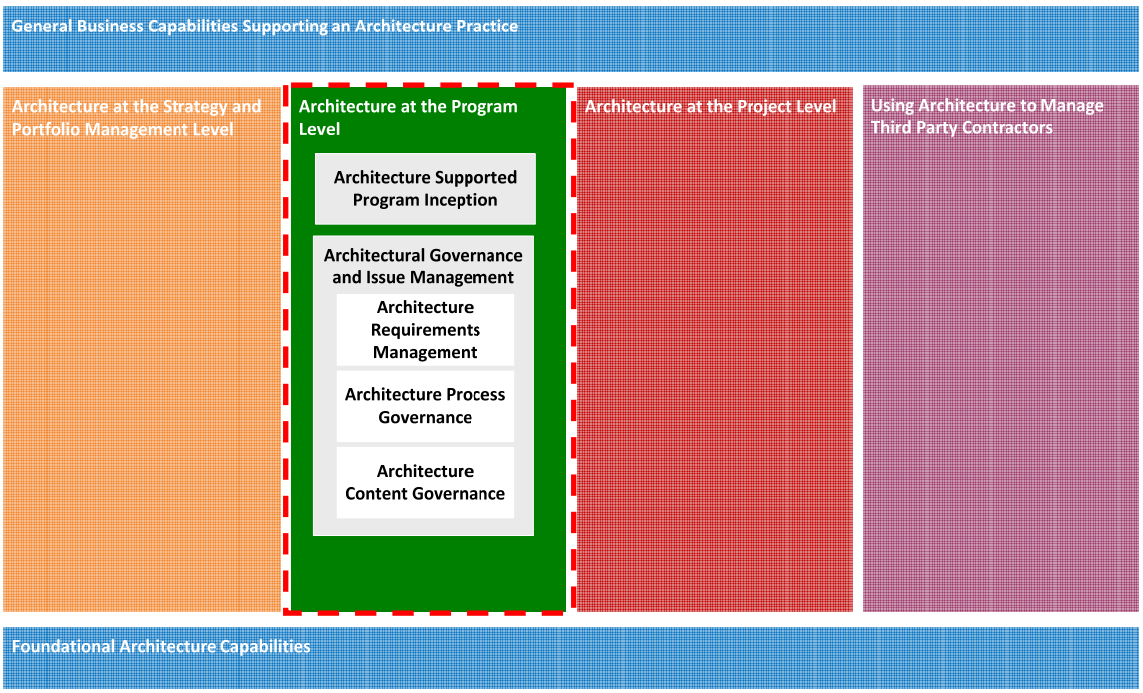

Figure 8: World-Class Enterprise Architecture Capability Model – Program-Level Capabilities

A world-class enterprise architecture function will use architecture to deliver large, cross-functional, multi-phase, and multi-project change initiatives. In this context, architecture is used to identify projects, set their terms of reference, align their approaches, identify synergies, and govern their execution. Key capabilities within this area include:

- **Architecture Supported Program Inception** – which uses architecture to support the mobilization and inception of change programs. Enterprise architects will help define a vision, establish scope, set key design decisions, and define program structures such as phases, streams, projects, team, and knowledge.
- **Architectural Governance and Issue Management** – which uses architecture to make significant design decisions, capture and manage architecture requirements, and address issues arising during the course of the project. Uses architecture reviews at predetermined checkpoints to assess the quality and compliance of project design and execution, and to manage or mitigate any non-compliance.

Lessons Learned

The key to enterprise architecture success is not the final product, but the process an organization follows to develop it – implementing the defined process to meet stated goals and objectives, while also reflecting the increases in maturity, competency, and participation will lead to continued improvements in effectiveness over time.

In order to gain credibility and authority, it is important that architects speak with one voice – architects stand for coherency and consistency. Therefore, they have to understand and share the same principles and standards. Building a community of practice is a way to achieve this.

Architecture at the Project Level

The diagram below illustrates the capabilities that an organization needs to adopt in order to provide a world-class enterprise architecture function at the project level.

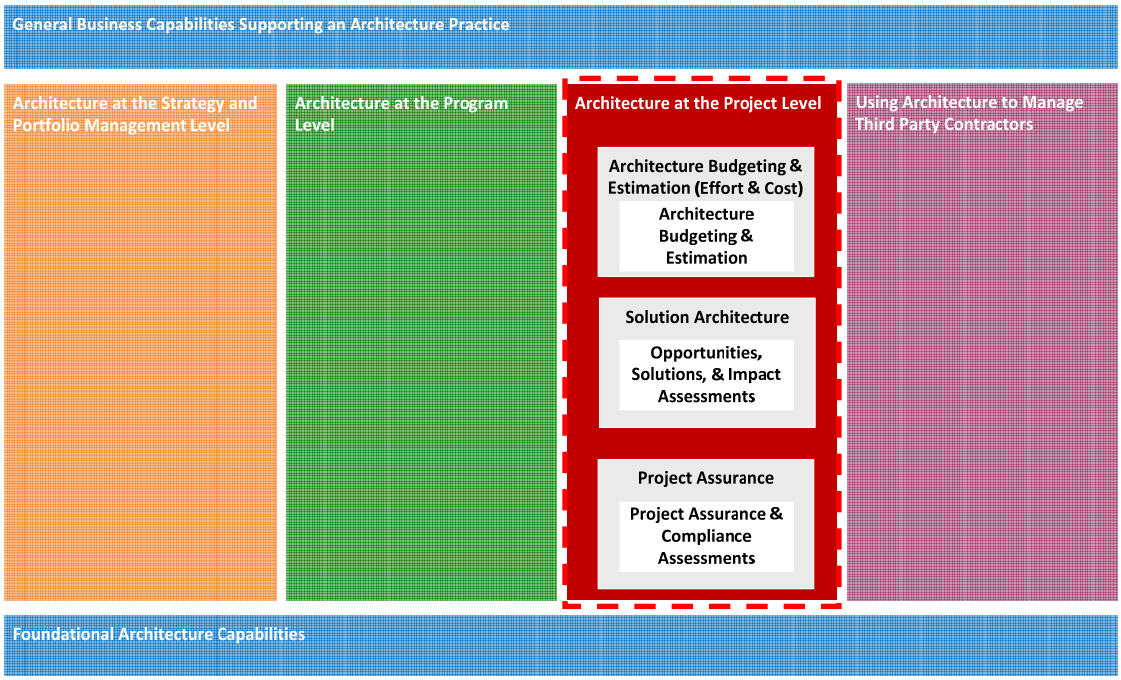

Figure 9: World-Class Enterprise Architecture Capability Model – Project-Level Capabilities

A world-class enterprise architecture function will use architecture alongside, or within, a project delivery method (such as rational unified process) in order to create project-level architecture deliverables, assure

compliance with architectural governance, and to support the integration and alignment between projects. Key capabilities within this area include:

- **Architecture Budgeting and Estimation –** which provides funding to undertake architecture activities, creates budgets, and manages spend against budgets.
- **Solution Architecture** – which uses architecture to articulate the high-level design for a project and govern its execution.
- **Project Assurance –** which uses architecture to assure the developed solution, and ensure that it is architecturally compliant through the different stages of a project implementation.

Lessons Learned

Pitfall: Architects do not deliver on time – architects sometimes seem to have their own deadlines and do not want to take the business deadlines into account. Sometimes, they even do not have a plan or are too ambitious and want to include everything in their solution. Ensure you create a plan and agree the level of granularity. Otherwise, the project could lead to an overrun in time and budget, and dissatisfaction among stakeholders.

Pitfall: Creation of "utopian" architectures – a utopia may be highly innovative from a technology point of view, but it is not only technology that counts. Technology needs to be implemented and absorbed by the organization. These architects are reaching beyond what is feasible, and will most likely be unable to gain broad support for their ideas.

Pitfall: Architects are too eager to try and stop non-compliant projects or initiatives – sometimes architects can be very rigid on enforcement of principles and standards. Architecture is then seen as a braking factor. Even though the architects may be within their rights, they are perceived as preventing the project from achieving its objectives.

Using Architecture to Manage Third-Party Contractors

The diagram below illustrates the capabilities that an organization needs in order to provide a world-class enterprise architecture function that can manage third-party contractors.

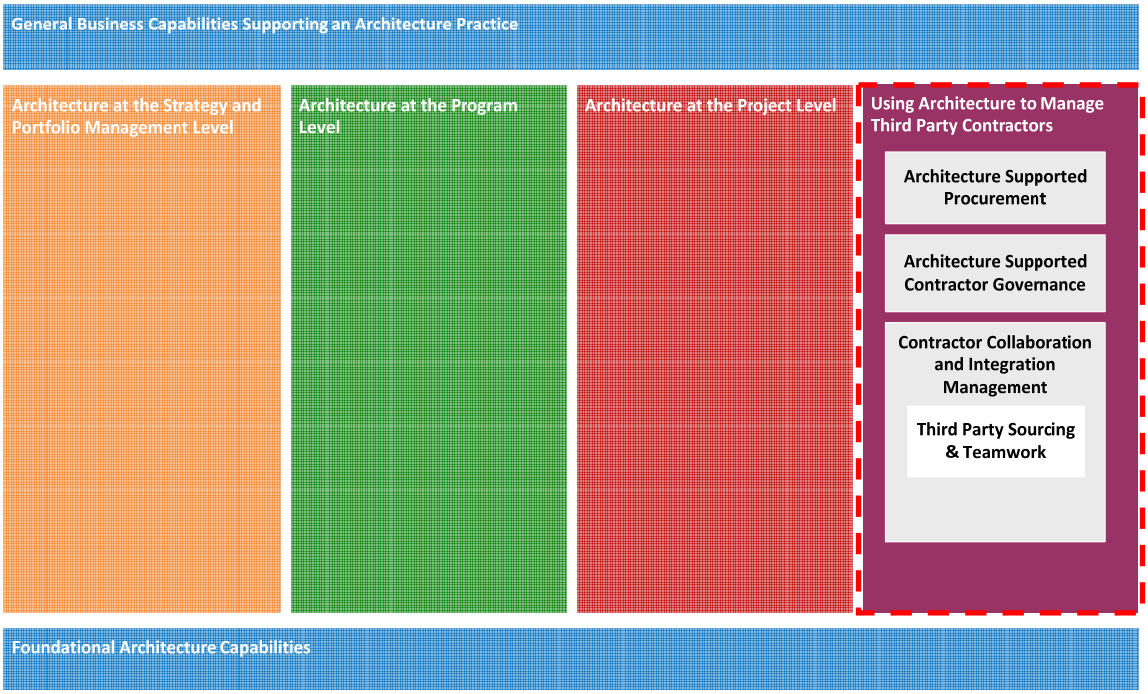

Figure 10: World-Class Enterprise Architecture Capability Model – Third-Party Contractor Capabilities

A world-class enterprise architecture function will use architecture to define a change activity, which can subsequently be subcontracted to a third party for delivery. Within this context, architecture can be used to support the procurement process, establish the basis of how architecture will be delivered by the subcontractor, and finally act as a governance framework for change. Key capabilities within this area include:

- **Architecture Supported Procurement –** which uses architecture techniques to express supplier requirements, determine selection criteria, evaluate supplier responses, and determine compliance criteria for suppliers.
- **Architecture Supported Contractor Governance** – which uses architecture to govern the subcontracted delivery of products and services, against a set of compliance and quality criteria.
- **Contractor Collaboration and Integration Management** – which uses standard architectural approaches to facilitate communication and collaboration, and manage dependencies and integration between third-party suppliers of products and services.

Lessons Learned

Demonstrate added value – the success and benefits of the enterprise architecture should be communicated. Success can also be defined, measured, and improved via formal metrics.

Procurement organization maturity – architecture teams must show demonstrable value to the procurement function in order to foster working relationships. Value is determined by the procurement function.

The Audience for World-Class Enterprise Architecture

The overarching key to the successful adoption of a world-class enterprise architecture function is the identification of a suitable audience for the architecture, and the subsequent demonstration of value to that stakeholder audience.

This section describes a number of the typical audience stakeholders for a world-class enterprise architecture function within an organization. For the purpose of the approach that is described in this White Paper, this section is a precursor to the next section (World-Class Enterprise Architecture: Capability Assessment), as stakeholders will need to be assessed together with the enterprise architecture capabilities in order to determine the current and future state capability models. It is thus not shown as a separate step in the approach diagram below.

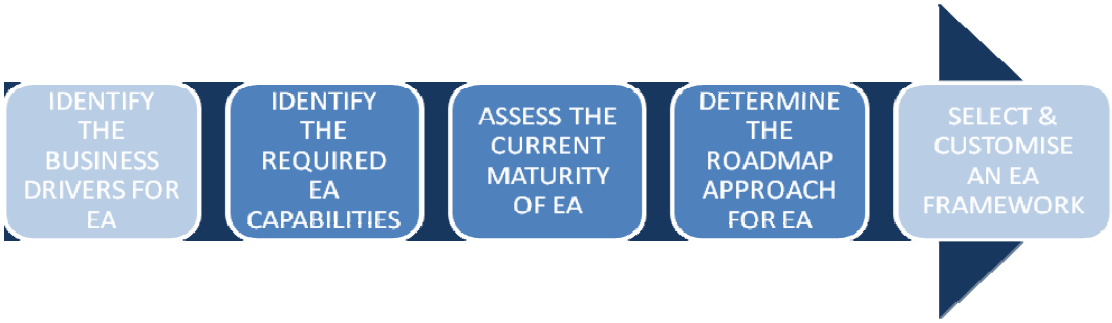

Figure 11: World-Class Enterprise Architecture Approach – Audience

Stakeholder groups that tend to have an interest in architecture, include the following:

- **Chief Executive Officer (CEO)** – who is typically concerned with the following:
  - Changing the enterprise as fast as possible, but in a sustainable manner
  - Portfolio managing the products and services offered by the enterprise
  - Understanding opportunities, and how to capitalize on them effectively
  - Understanding when to build, acquire, or subcontract capabilities
- **Operational Executives** – who are typically concerned with the following:
  - Increasing operational performance against key performance indicators
  - Leveraging best practice to realize operational excellence
  - Limiting the negative impacts of change on existing operations
  - Maintaining employee morale and advocacy for change
- **Commercial and Financial Executives** – who are typically concerned with the following:
  - Increasing the value of the enterprise, whilst reducing costs
  - Avoidance of large-scale and risky capital expenditure
  - Maintaining visibility and control of the earned value, and risk profile of change activity

    - Contracting effectively with suppliers
- **Chief Information Officer (CIO)** – who is typically concerned with the following:
    - Ensuring that successive IT deployments reduce (or do not unduly increase) the overall complexity and cost of the IT landscape
    - Reducing the level of reactive change and responding to reactive change effectively
    - Maintaining operational service levels, and guarding against risks to service provision
- **Head of Change** – who is typically concerned with the following:
- Maintaining a balanced portfolio without overlaps or white-spots
    - Effective sequencing and throttling of change
    - Stakeholder engagement and satisfaction
    - Accurate prediction of the costs of change
    - Effective and objective prioritization of change
- **Architecture Practitioners** – who are typically concerned with the following:
    - Maintaining visibility and influence over stakeholder thinking
    - Backing the right industry trends
    - Demonstrating value from architecture
    - Professional discipline and growth in the practice of architecture
- **Governance Bodies** – who are typically concerned with the following:
    - Summarization and communication of change approach and status
    - Assured compliance to governance criteria
    - Effective and consistent resolution of issues and changes in approach
    - Aligned change initiatives, with managed dependencies
- **Program and Project Management Professionals** – who are typically concerned with the following:
    - On-time and on-budget delivery
    - Proactive engagement and management of stakeholders
    - Issue identification, issue resolution, and escalation
    - Ensuring a complete understanding of scope and effort
    - Identification and mitigation of risk
- **Subject Matter Experts and Project Teams** – who are typically concerned with the following:
    - Understanding the big picture context

- Easy access to knowledge artefacts and project compliance criteria
- Working with a low-stress and high-productivity environment

- **Chief Risk Officer** – who is typically concerned with the following:
  - Identifying the risks facing the organization, and determining the unacceptable risks together with the probability and the severity of impact for each risk
  - Determining the mitigation plans for all major risks
  - Recommending a risk and security investment plan in order to mitigate unacceptable risks for the coming year
  - Monitoring risks continuously in order to confirm their probability and the severity of impact
- **Chief Compliance Officer** – who is typically concerned with the following:
  - Determining the compliance and regulatory requirements for the organization
  - Liaising with regulators and other compliance bodies in order to determine the specific compliance criteria
  - Accountability for compliance evidence for the organization

The table below provides an indication of the relevance of specific architecture capabilities for different stakeholder groups.

Stakeholder Group	Relevance of Architecture to the Stakeholder Group at the …			
	Strategy & Portfolio Management Level	Program Level	Project Level	Subcontractor Management Level
CEO	High	Low	Low	Low
Head of Change	High	Medium	Low	Medium
Operational Executives	High	High	Low	Medium
CIO	High	High	Medium	High
Architecture Practitioners	High	High	High	High
Governance Bodies	Low	Medium	High	High
Program & Project Management Professionals	Low	Medium	High	High
Commercial & Financial Executives	Low	Medium	Low	High
Subject Matter Experts & Project Teams	Low	Low	Medium	Low
Chief Risk Officer	High	Medium	Medium	Low
Chief Compliance Officer	High	Medium	Medium	Low

Table 1: Enterprise Architecture Capability to Stakeholder Mappings

World-Class Enterprise Architecture: Capability Assessment

This section outlines the assessment options that an organization can undertake in order to first identify the capabilities needed to respond to a specific business challenge, determine the level of maturity of its existing enterprise architecture function, and then develop a roadmap that makes the enterprise architecture function world-class.

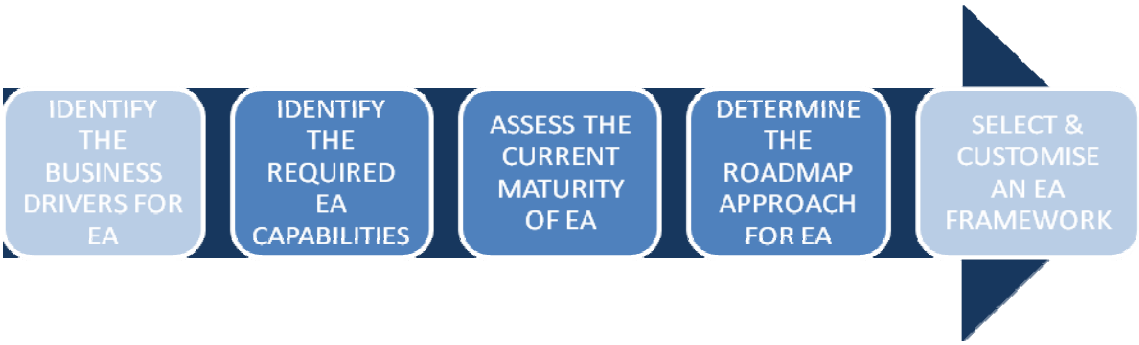

Figure 12: World-Class Enterprise Architecture Approach – Capability Assessment

Using the capability model put forward, an organization can obtain a useful picture of its architecture capability. This White Paper advocates the use of this capability model as a means to determine the enterprise architecture capabilities to develop, identify the capabilities that require more effort and resources, and understand the corresponding business change that is required in order to adopt these capabilities.

In our experience, architecture teams often operate independently of the priorities identified. Although, an organization may acknowledge one area as more important than another area, in reality, the architecture team may focus the majority of their effort on the area of adjudged lesser importance. This type of capability assessment is a simple way to show such a misalignment.

Architecture teams can use this new capability model to undertake a number of activities. The three most useful activities that we observe taking place right now are:

- **Capability Prioritization** – what capabilities should the team be developing or utilizing, and of equal importance, what capabilities should it not be pursuing?
- **Individual-to-Capability Alignment** – based on the capabilities identified, how well are the individuals, assigned to each capability, actually placed to fulfil them?
- **Team Benchmarking – Maturity Assessment** – with a view to progressing or developing new capabilities as a consequence of comparison against other teams within the marketplace, either within their own industry or in a completely different industry

Capability Prioritization

This activity is valuable as many architecture teams are trying to be all things to all parties. They do not prioritize their effort and so end up doing many things to a lesser quality, rather than fewer things to a high degree of quality. Teams who do not prioritize their effort often find it difficult to finish any one particular task. Instead, they prefer to revisit the task constantly, or continue to analyze information well beyond the time necessary. This scenario is especially true for teams that are trying to complete a current state assessment of the landscape. Furthermore, these teams find it very difficult to say “no”, and so often end up owning the problems nobody else wants, or can actually solve. Examples of this scenario include master data management, and the

alignment between business and IT, which these teams should really view as objectives rather than problems. Yet, these examples tend to be common features on the agenda of many enterprise architecture teams.

To maximize value from this exercise, we advocate the following process for prioritizing architecture capability within an organization:

1. Determine the organization type and operating model; i.e., is the enterprise architecture team focused at the macro, micro, or business unit level?
2. Determine the target capability model that is required in order to respond to specific business challenges or team drivers
3. Analyze the profile of current effort, and determine the baseline capability model in order to find out where effort is currently allocated
4. Augment the target capability model reflecting any organization-specific needs
5. Analyze the results, noting the areas of greatest difference

By observation, organizations tend to use one of the following three approaches in order to prioritize and develop their architecture capability:

- **Micro to Macro** – where capabilities are developed at the micro (i.e., project) level. Over time, the intent is to incrementally extend this capability to the program and enterprise level.
- **Macro to Micro** – where capabilities are developed at the macro (i.e., enterprise strategy and portfolio management) level. Over time, the intent is to incrementally extend this capability to the program and project level.
- **Business Unit by Business Unit** – where capabilities are focussed around single business units, such as an area with more opportunities or with a greater level of support for the concept of enterprise architecture. Usually this approach results in an extension of the initial capabilities to other business units.

The point is that teams should not try to do everything at once.

This section now describes each of these three approaches in more detail.

Micro to Macro

With this approach, the emphasis is on project architecture, and project assurance against a subset of architecture requirements or standards. Little effort is required to manage the team at an enterprise level, as the value proposition is to architect and implement projects effectively. Instead, the priority is to first identify candidate projects that collectively will provide coverage across the enterprise landscape, and then support those projects. From a foundational perspective, all capabilities are in play due to the long-term objective of knowledge sharing and expansion from the micro to macro levels.

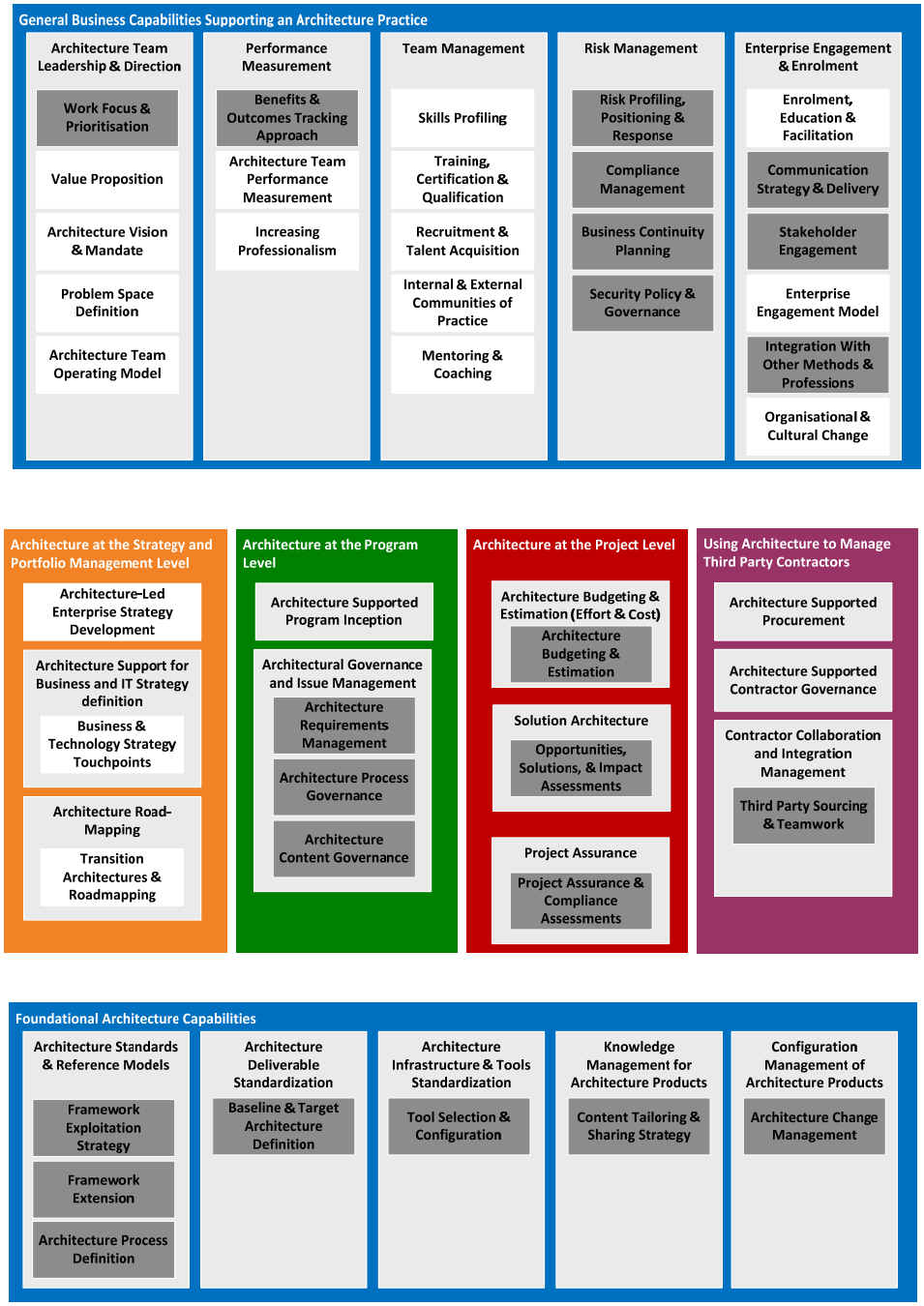

Figure 13: World-Class Enterprise Architecture Capability Model – Micro to Macro

Note: Dark grey indicates capabilities to be included; white indicates capabilities to be re-prioritized.

Macro to Micro

With this approach, architecture teams are focused on the establishment of metrics and the demonstration of value at a strategic level. Therefore, more reliance is on the general business capabilities to support an architecture practice. Activities around the problem space definition (i.e., where will the architecture team

focus?) and team management are crucial to success, as is a game plan for enterprise engagement and stakeholder management. Less emphasis is placed on project-level capabilities.

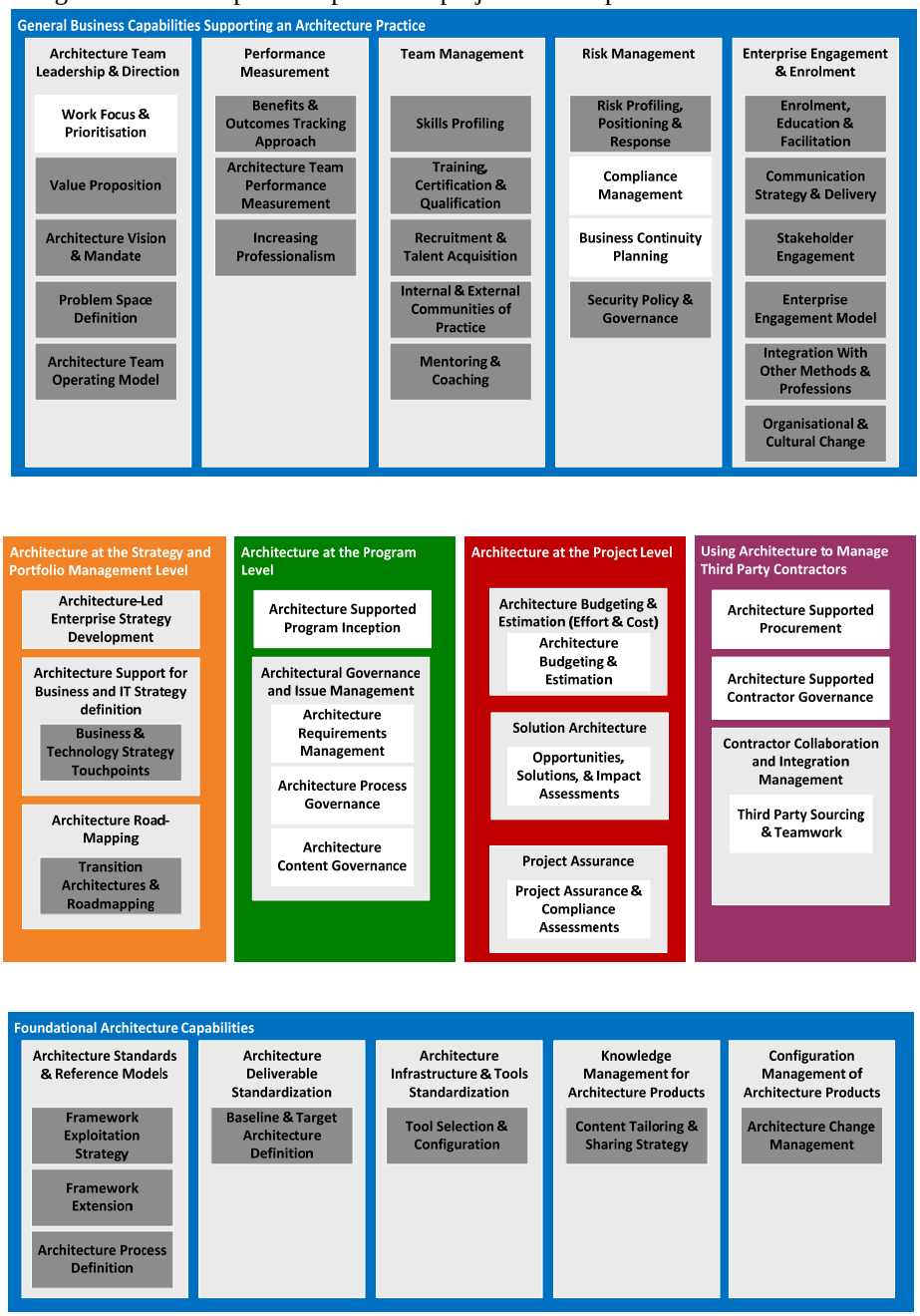

Figure 14: World-Class Enterprise Architecture Capability Model – Macro to Micro

Note: Dark grey indicates capabilities to be included; white indicates capabilities to be re-prioritized.

Business Unit-Focused

With this approach, architecture teams that are deployed within business units, or are solely concerned with satisfying the needs of individual business units, have one more option available. In this instance, the emphasis is on project support and delivery, as well as the management of third parties and contractors, where

appropriate. A small requirement exists for team management but little else amongst the general business capabilities, and almost no requirement around the foundational capabilities due to the absence of any objectives for knowledge sharing or re-use.

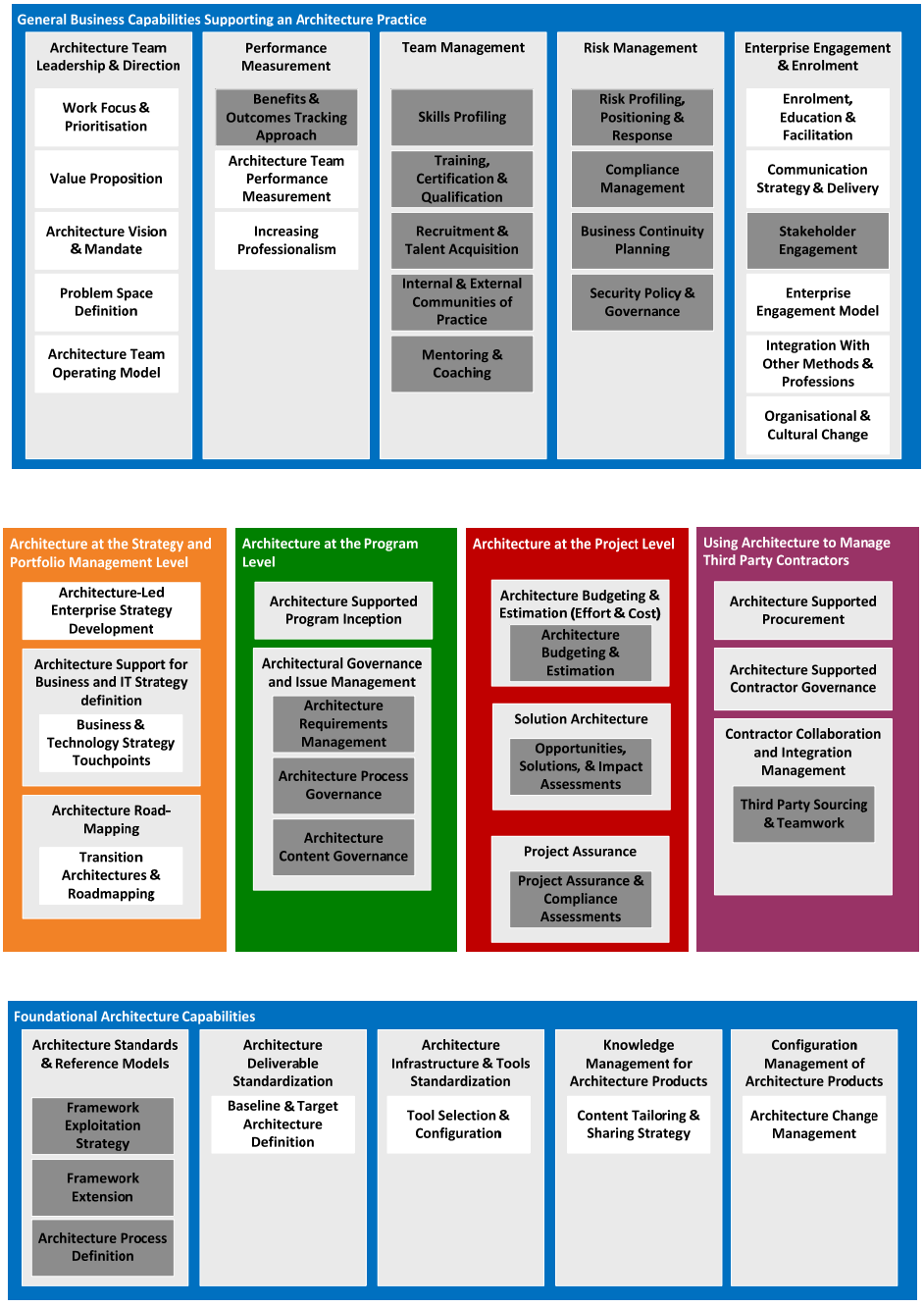

Figure 15: World-Class Enterprise Architecture Capability Model – Business Unit

Note: Dark grey indicates capabilities to be included; white indicates capabilities to be re-prioritized.

Individual-to-Capability Alignment

This activity is useful to identify the vast (and, right now, difficult to measure or identify) gap between the capabilities that have been identified, and the ability of the individuals within the team to actually fulfil such capabilities.

For example, many architecture teams have been found wanting in the area of stakeholder management. Yet, when the profiles of the individuals within the team are analyzed it is hardly surprising, as many architects do not have backgrounds with stakeholder interaction, and of those that do, it is limited to people within their own field and rarely extended to people outside of their area of expertise.

Our work here addresses this challenge, and in the future, we hope to build on the process and model as a means to better equip architects in order to meet these challenges.

To maximize value from this exercise, we advocate the following process for assessing the fit between individual skills and enterprise architecture capabilities:

1. Determine the architecture organization type and operating model; for example, is the team focused at the macro, micro, or business unit level?
2. Determine the target enterprise architecture capability model in response to specific business challenges or team drivers
3. Determine the skills needed to fulfil the enterprise architecture capabilities, using a generic skills framework
4. Determine the skills available by looking at the individuals within the team, and the roles and activities they regularly undertake
5. Compare the skills identified in the target enterprise architecture capability model with those allegedly available
6. Augment the enterprise architecture capability model reflecting any organization-specific factors, such as varied reporting lines or budget and funding allocation models
7. Analyze the results, noting the areas of greatest difference

The objective of this activity is to identify the skills that are needed in order to fulfil each enterprise architecture capability. Each organization tends to have its own skills framework; however, our observation is that few have progressed this thinking specifically into the architecture space. Few organizations can actually point to the capability around “value proposition”, and identify the skills needed at an individual level to provide this capability.

In reality, a combination of softer skills such as communication, enrolment, facilitation, education, influencing, value case articulation and positioning, and harder skills around technical proficiency, architectural correctness, technical effort estimation, and development capability are needed.

Why is this useful?

By observation, architects in most companies can expect five to ten days training per year, and the overwhelming majority of this training is directed toward harder skills development, such as architecture framework education and certification, or technical package education and configuration, when they may be much better served by training that seeks to develop the softer side.

This assessment will highlight such discrepancies, and provide the breakthrough needed to secure funding for such a shift in focus.

Team Benchmarking – Maturity Assessment

The team benchmarking activity is useful for teams that wish to compare themselves against other teams within the marketplace, either within their own industry or in a completely different industry. It is also useful for those teams that wish to plot their progression along a specified timeframe.

Our observation is that many companies undertake this activity in an artificial and rarefied environment in which the assessment in actually done against anecdotal evidence of activities undertaken.

Therefore, instead of providing a way forward to enhance strength and expose weakness, it ends up being a broad-brush assessment that expects teams to cover all bases, all of the time. Our view is that it is perfectly reasonable for different teams to focus on different areas.

Teams that do not prioritize will end up muddling through the work with few wise additions to the organization's agenda.

To maximize value from this exercise, we advocate the following process for measuring, assessing, and planning architecture capability within an organization:

1. Determine the organization type and operating model; i.e., is the enterprise architecture team focused at the macro, micro, or business unit level?
2. Determine the baseline capability model; i.e., where effort is currently allocated
3. Determine the target capability model that is required in order to respond to specific business challenges or team drivers
4. Augment the capability model in order to reflect any organization-specific needs
5. Assess the baseline capability model against the sample maturity model, and obtain the rating
6. Assess the target capability model against the sample maturity model, and obtain the rating
7. Analyze the ratings, noting the areas of greatest difference

Once these scores have been obtained, a number of actions are available.

For example, the difference between the scores can be used as an indicator to assess the magnitude of the proposed change. A score difference that is two or three times the baseline score means the team faces a significant change in the future as it seeks to adopt many more capabilities than it currently performs.

To determine the score, it is recommended that an organization create their own scoring framework or use industry standards such as the Standard CMMI Appraisal Method for Process Improvement (SCAMPI). This method provides a detailed means to evaluate the position of the capability within a category.

A simple matrix is shown below, where an enterprise architecture team is assessed against the six high-level areas of capability. **Note**: Organizations are recommended to undertake a more detailed analysis using the lower-level additional elements of each area.

Characteristic	Level 1 (Initial)	Level 2 (Managed)	Level 3 (Defined)	Level 4 (Quantitatively Managed)	Level 5 (Optimising)
Core Business Capabilities for an Architecture Practice					
Architecture at the Strategy and Portfolio Management Level					
Architecture at the Program Level					
Architecture at the Project Level					
Using Architecture to Manage Third Party Contractors					
Foundational Architecture Capabilities					

Table 2: Enterprise Architecture Capability Maturity Assessment

For example, if we use the matrix above for an architecture team that has some semblance of architecture leadership and direction, in the form of an outdated static document, but little by the way of formal team management or enterprise engagement, and certainly nothing by way of performance measurement or risk management, then the team would be positioned at level 1 (i.e., the initial level) for Core Business Capabilities.

Conversely, if the team has formal processes for each of the Core Business Capabilities, and these processes are optimized through quantitative assessment and periodic review, then the team would be positioned at level 5 (i.e., the optimized level).

The point is that an enterprise architecture function should not try to do everything at once.

Conclusion

Our observation is that architecture teams right now have little visibility of their capabilities, the importance of each of their capabilities, and the time spent fulfilling each capability. A base-lined capability model will provide value as it will support an effective planning approach to adopt additional capability in response to business challenges or team drivers. Likewise, if certain issues are removed from the problem landscape, the capability model provides the means to retire a capability, or re-focus effort elsewhere.

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